

# Notice of Allowability

Application No.

10/040,059

Examiner

Jennifer Y. Cho

Applicant(s)

BOCIAN ET AL.

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/6/07.
2. ☒ The allowed claim(s) is/are 1-2, 4-9, 13-16, 20, 22-30 and 32.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **Detailed Action**

### **Allowed Claims**

Claims 1-2, 4-9, 13-16, 20, 22-30 and 32 are allowed over the prior art of record.

### **Response to Arguments**

Applicant's amendment filed 8/6/07 is sufficient to overcome the 112, 102 and 103 rejections of the previous office action. Therefore, the rejections have been withdrawn.

### **Reason for Allowance**

Applicant's claimed invention is directed to a semiconductor process for self-assembled monolayers by coupling a redox-active molecule to a Group IV element surface, by first halogenating the surface, then adding a solution of the redox-active molecule which is alcohol-terminated to the surface in a coupling reaction, forming a covalent bond between the surface and the oxygen of the redox-active molecule.

The closest prior art is Marks et al. (US 5,834,100). Marks et al. teaches a self-assembly method (column 3, line 32) of coupling redox-active porphyrinic molecules (column 2, lines 28-29, column 9, line 6) to a surface with halogenated silicon (column 7, lines 1-17). The porphyrinic molecules are alcohol-terminated and in solvent, which is contacted with the silicon surface through a Si-O bond (figure 5A, sheet 3 of 6;

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column 3, lines 28-39; column 6, line 4; column 7, lines 1-17; example 7b, column 15, lines 25-40)).

Marks et al. is deficient in that the surface is hydroxylated, rather than halogenated, and the porphyrin substrate is chlorosilated, rather than alcohol-terminated. The functionalization of the redox-active substrate and the Group IV element surface is switched in Marks et al., in comparison to the instant claims.

Marks et al. neither teaches, nor suggests the limitations of claim 1 as described above. Nor would it have been obvious to modify Marks et al.'s process to arrive at the instantly claimed invention. There is no motivation to do so.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Y. Cho whose telephone number is (571) 272 6246. The examiner can normally be reached on 9 AM - 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272 0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer Cho  
Patent Examiner  
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